

the contact hole and connected to the upper electrode,

wherein the ferroelectric film includes a crystal that does not include Ti, and

wherein the contact layer is a single-layer film or a multilayer structure, the single-layer film being made of a metal oxide or a metal nitride, the multilayer structure being made up of metal oxide and metal nitride films.

*Cl 2
Cont*
9. (New) The device of claim 6,

wherein the upper electrode contains Pt or Ir, and

wherein the metal oxide film is made of an oxide of Ti or an oxide of Ta, while the metal nitride film is made of a nitride of Ti or a nitride of Ta.--

REMARKS

At the outset the Examiner is thanked for the review and consideration of the present application.

The Examiner's Action dated August 14, 2002 has been received and its contents reviewed. Prior to this Amendment, claims 1-5 were pending in the present application for consideration, of which claims 3-5 have been withdrawn from consideration. By this amendment, claim 2 has been canceled, and new claims 6-9 have been added. Accordingly, claims 1, and 6-9 are pending for consideration.

Turning now to the detailed Office Action, the title of the invention is objected to as not descriptive. In response, Applicants have amended the title of the invention, as shown above.

Claim 2 is rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is connected, to make and/or use the invention. Particularly,

the Examiner alleges that the written description never discloses why the upper electrode contains Ir and the metal Oxide film is made of an oxide of Ta as claimed in claim 2. Applicants respectfully submit that as claim 2 has been canceled, the rejection is now moot. However, notwithstanding the cancellation of claim 2, Applicants note that lines 5-11 in page 8 of the specification discloses the rationale for using Ir and an oxide of Ta as claimed. Further, as Applicants are not aware of any requirement for disclosing "why" or the reason for each limitation being claimed, Applicants respectfully request the Examiner to enlighten Applicants on this reason for the rejection so that Applicants may better prepare an application in the future.

OK
Claims 1 and 2 are rejected under 35 U.S.C. §103(a) as unpatentable over Jun in view of Applicants' Admitted Prior Art (AAPA) shown in Fig. 5. This rejection is respectfully traversed at least for the reasons provided below.

Claim 2 has been canceled. Therefore, the §103(a) of claim 2 is now rendered moot.

As recited in claim 1, the present invention comprises a ferroelectric film including $\text{SrBi}_2\text{Ta}_2\text{O}_9$. There is no Ti in the ferroelectric film.

On the other hand, Jung teaches a ferroelectric film having two layers of PZV ($\text{PbZrTi}_{1-x}\text{O}_3$), and both upper and lower layers including Ti, as disclosed at least in the abstract. Hence, Jung does not teach, disclose, or suggest comprises a ferroelectric film including $\text{SrBi}_2\text{Ta}_2\text{O}_9$, recited in claim 1, and the ferroelectric film of claim 1 is different from that of Jung.

Moreover, as the prior art of the present invention in Fig. 5 also does not teach using Ti in the ferroelectric film, its combination with Jung in the §103(a) would be improper.

Claim 1 has been amended, as shown above, to further clarify the claim language.

New claims 6-9 have been added to further complete the scope of the invention to which Applicants are entitled. New claim 6 of the present invention recites the ferroelectric film composing Sr, Bi, Ta and O, and new claim 8 specifically recites that the ferroelectric film does not include Ti.

As discussed above, Jung teaches a ferroelectric film having two layers of PZV (PbZrTi_{1-x}O₃), and both upper and lower layers including Ti. However, as the ferroelectric film of both new claims 6 and 8 do not include Ti, the claims 6 and 8 also distinguish over Jung.

In view of the foregoing, it is respectfully requested that the rejections of record be reconsidered and withdrawn by the Examiner, that claims 1, and 6-9 be allowed and that the application be passed to issue. If a conference would expedite prosecution of the instant application, the Examiner is hereby invited to telephone the undersigned to arrange such a conference.

Respectfully submitted,



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MARKED UP VERSION OF AMENDED CLAIM 1

1. (Amended) A semiconductor device comprising:
 - a lower electrode formed on a substrate;
 - a capacitive insulating film formed out of a ferroelectric film on the lower electrode;
 - an upper electrode formed on the capacitive insulating film;
 - a contact layer formed on the upper electrode;
 - an insulating film formed to cover the lower electrode, the capacitive insulating film, the upper electrode and the contact layer;
 - a contact hole passing through the insulating film and the contact layer to reach the upper electrode; and
 - a metal interconnect, which is defined on a part of the insulating film, [filled] provided at least in the contact hole and connected to the upper electrode,
wherein the ferroelectric film includes SrBi₂Ta₂O₉, and
wherein the contact layer is a single layer film or a multilayer structure, the single-layer film being made of a metal oxide or a metal nitride, the multilayer structure being made up of metal oxide and metal nitride films.